



Reduction of the prevalence of  
Salmonella enteritidis in the  
commercial egg industry through  
vaccination:

## The Pennsylvania Experience

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# SE Pilot Project

## 1992 - 1995

<input type="checkbox"/> Total flocks participating	134
<input type="checkbox"/> SE positive manure or egg belt samples	16.1 %
<input type="checkbox"/> Flocks with SE positive manure or belt samples	47.7 %
<input type="checkbox"/> Flocks with SE positive eggs %	37.2
<input type="checkbox"/> SE prevalence in eggs from flocks in SE positive environment (per 10,000)	2.75

# SE Status of PEQAP Flocks

	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Total flocks participating	261	316	315	317
SE positive manure samples (%)	2.06	2.23	1.32	1.91
Flocks with SE positive manure samples (%)	10.7	13.9	10.2	9.8
Flocks with SE positive eggs (%)	7.3	10.1	5.1	4.4
SE prevalence in eggs from flocks in SE positive environment (per 10,000)	2.19	1.51	1.16	1.04
	29/132,240	53/350,613	27/231,499	19/182,160

# Results of Environmental Testing in PEQAP Layers (By Samples)

	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Total No. of Flocks	n = 261	n = 316	n = 315	n=317
Non-vaccinated Flocks	258	295	228	224
SE Positive Samples/Total	82 / 3,913 2.1 %	172 / 6,975 2.47 %	59 / 3,653 1.62 %	70 / 2,854 2.45%
SE Bacterin Vaccinated	3	21	87	71
SE Positive Samples / Total	0 / 74 0 %	1 / 517 0.19 %	3 / 1,017 0.29 %	2 / 852 0.23%

# Results of Environmental Testing in PEQAP Layers (By Flocks)

	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Total No. of Flocks	n = 261	n = 316	n = 315	n=317
Non-vaccinated Flocks				
Flocks with SE (+) Manure	28 / 258	43 / 295	29 / 228	27 / 224
	10.9 %	14.6 %	12.7 %	12.1%
SE Bacterin Vaccinated				
Flocks with SE (+) Manure	0 / 3	1 / 21	3 / 87	2 / 71
	0 %	4.8 %	3.4 %	2.8%

# Results of Egg Testing in PEQAP Laying Flocks with SE (+) Environment

	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
<b>Non-vaccinated Flocks</b>				
No. Flocks	258	295	228	224
Flocks SE (+) eggs / Total	19 / 258	32 / 295	16 / 228	12 /
224				
	7.4 %	10.8 %	7.0 %	5.4%
<b>SE Bacterin Vaccinated</b>				
No. Flocks	3	21	87	71
Flocks SE (+) eggs / Total	0	0 / 21	0 / 87	1 / 71
	0%	0%	0%	1.4%

# Cumulative Results of SE Prevalence in PEQAP Flocks Following Use of LAYERMUNE SE (1997-2000)

	Not Vaccinated	Vaccinated	Reduction
Total flocks (n=1187)	n=1005	n=182	
(73.3 million birds tested)	57.4 million	15.9 million	
% Flocks with SE (+) Eggs	7.9%	0.55%	93%
% SE (+) Environmental Samples	2.20 %	0.24%	89%
% Flocks SE (+) Environment	12.6 %	3.3 %	74%
% (+) Environmental Samples in (+) flocks	25.2 %	8.3%	67%



# Conclusions

- Analysis of PEQAP data from January, 1997 to December, 2000, shows an 89% reduction in SE positive environmental samples (manure swabs) in Layermune SE vaccinated flocks when compared to non-vaccinated flocks.

# Conclusions

- Analysis of the same data bank shows that during the same time period there has been a 93% reduction in SE positive eggs in Layermune SE vaccinated flocks when compared to non-vaccinated flocks.

# Conclusions

- The impressive SE reduction achieved by the Pennsylvania Egg Quality Assurance Program (PEQAP) has improved with the increased use of Layermune SE.

# Conclusions

- Use of Layermune SE vaccination against *Salmonella enteritidis* should be recognized by the President's Council on Food Safety (Objective # 7) as an extremely cost-effective and already available tool to achieve its goal to minimize the risk of SE positive table eggs.

- Example: Cost of pasteurization = \$ 0.36 / dozen eggs

$$\begin{array}{l} \text{Cost of vaccination with 1 dose of Layermune SE} \\ = \\ \$ 0.0035 / \text{dozen eggs (100 times less)} \end{array}$$

## SE Prevalence in PEQAP Layers -2000-

Total Flocks (n = 317)	n = 224	n = 22	n = 71
	Not Vaccinated	Vaccinated Competitors	Biomune
% SE <sup>(+)</sup> Flocks (Environment)	12.1 (27/224)	9.1 (2/22)	2.8 (2/71)
% SE <sup>(+)</sup> Environmental Samples	2.45 (70/2854)	1.52 (4/264)	0.23 (2/852)
% Flocks with SE <sup>(+)</sup> Eggs	5.4 (12/224)	4.5 (1/22)	1.4 (1/71)
% <sup>(+)</sup> Env. Samples in <sup>(+)</sup> Flocks	21.6 (2.59/12)	16.7 (2/12)	8.3 (1/12)